

# N ewsletter



Global Center of Excellence (GCOE)  
Kyoto University-University of Malaya



Kyoto University Global COE Program  
Global Center for Education and Research on  
Human Security Engineering for Asian Megacities



Special Coordination Funds for Promotion Science and Technology  
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JSPS-Asian Core Program (IWM)

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The 2<sup>nd</sup> JSPS Asian Core Program (IWM) Comprehensive Symposium held in Research Management & Innovation Complex, University of Malaya (Nov 22-23, 2012). 64 Malaysian and 35 Japanese participants attended the symposium.



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Prof. Yoshihisa Shimizu, Y. Bhg. Datuk Ir. Hj. Ahmad Husaini bin Sulaiman, Prof. Masao Kitano and Prof. Dr. Nik Meriam Nik Sulaiman before the keynote address delivered by Y. Bhg. Datuk Ir. Hj. Ahmad Husaini bin Sulaiman (Nov 23, 2012).

University of Malaya-Kyoto University program  
is an international program under:



# TRANSITIONING LOW-INCOME URBAN COMMUNITIES TOWARDS ENVIRONMENTAL SUSTAINABILITY: AN ACTION RESEARCH AT KONDO RAKYAT, PANTAI DALAM, KUALA LUMPUR



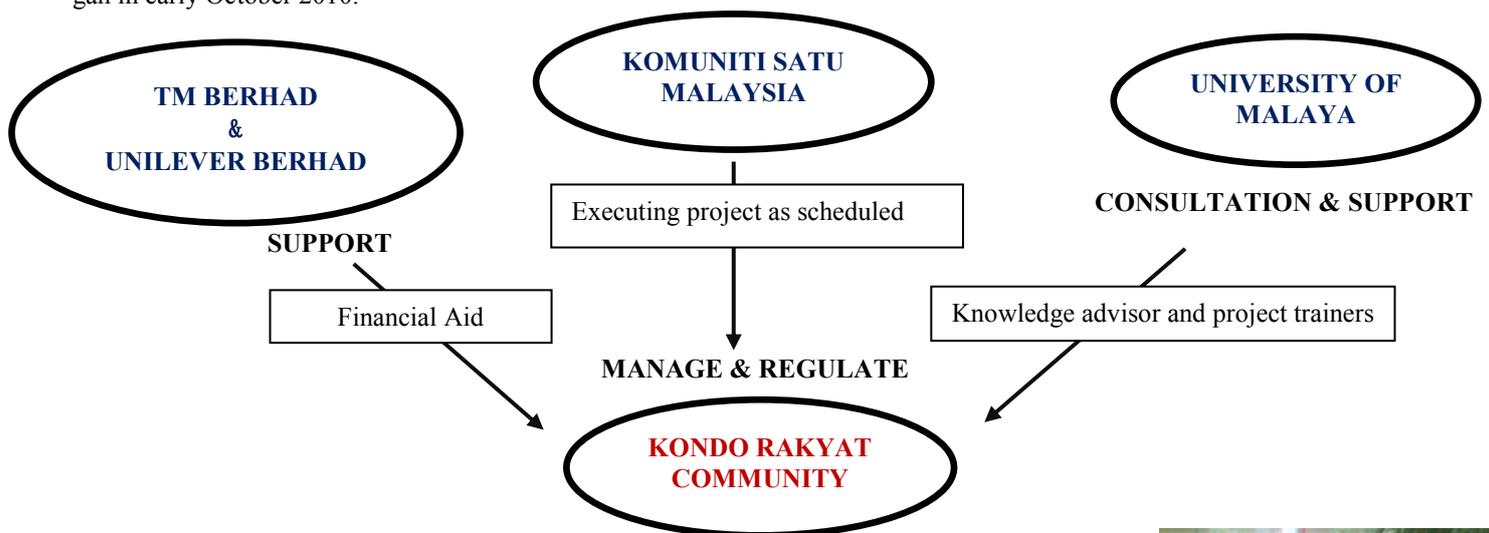
**Principal Investigator:** Dr. Zeeda Fatimah Mohamad

**Members:** Prof. Dr. Nik Meriam Nik Sulaiman, Prof. Datin Dr. Azizan Baharuddin, Prof. Ir. Dr. Abdul Aziz Abdul Raman, Assoc. Prof. Dr. Fatimah Kari, Dr. Amran Muhammad, Lili Fariza Ariffin.

**Prepared by:** Nur Fatehah Raudhah Ariffin

## Introduction & Objective:

Kondo Rakyat Environmental Sustainability Programme has been designed as a collaborative effort between the Kondo Rakyat Community with their neighbouring communities i.e. University Malaya, Unilever Berhad and TM Berhad to transform Kondo Rakyat into a more environmentally sustainable living area. The ultimate objective of this research is to develop Kondo Rakyat into a model environmentally sustainable community and perhaps in the future they can share it with the other low-income community. Four sustainability projects were shortlisted for the research namely used cooking oils, kitchen garden, composting and green bazaar during the first stakeholders meeting on 13<sup>th</sup> July 2010. However, the implementation of the project only began in early October 2010.



## KITCHEN GARDEN

The idea of “kitchen garden” (a garden designed to produce fruits and vegetables to be used for home cooking) as a form of sustainable landscaping seems very attractive to the community, especially for the women folk.

**OBJECTIVES:** To fully utilize the empty land and plant it with various species of edible plants. These plants can be used personally by the community or can be sold at the Green Bazaar. The concept of ‘1 Rumah 1 Pokok’ (1 Plant per Home) will also be introduced in the project.



**OUTCOME:** One day of training and demonstration programme was held on 7<sup>th</sup> May 2011 (11.00 a.m.) at Kondo Rakyat. The professional trainers, Miss Jihan Hanani Hassan, one of the organic farmers in Malaysia went there to help the community in making their own organic kitchen garden. 56 people (most of whom (96%) are housewives) attended this programme. Within this programme, Kondo Rakyat community were introduced with a good quality of plants seeds for their kitchen garden project, such as sweet hybrid corn called “Jagung Mutiara”, eggplant seed, cabbage seed and many more edible and herbs plant seeds. During the second Green Bazaar (3<sup>rd</sup> December 2011), Kondo Rakyat community begun to sell their kitchen garden products on a small scale. Edible and herb plants such as serai, bunga kantan, daun kesum, bananas were among the herbs that they sold.



## COMPOSTING



After witnessing the composting demonstration during the launching of the Kondo Rakyat project (13<sup>th</sup> July 2010), the community saw an opportunity to convert their garden waste into compost. The compost can either be sold or used in their own landscaping projects.

**OBJECTIVES:** To train the community of Kondo Rakyat about composting techniques and to deliberate the possibility of establishing composting facilities in the Kondo Rakyat.

**OUTCOME:** Puan Mariam Osman did a demonstration and training for eco-enzyme composting; a complex solution produced by fermentation of fresh kitchen waste (fruit and vegetable residue), sugar (brown sugar) and water. This eco-enzyme is a multipurpose liquid and its applications mainly covered on household and agricultural purposes. While another trainer, Miss Jihan Hanani Hassan, did a much more conventional type of composting which only involved fermentation of sugar ('gula melaka') and kitchen waste residue and can be used for agricultural purposes only. Through training, eco-enzyme composting had gained much interest by the housewives and an association of Kondo Rakyat housewives called "Jawatankuasa Rukun Tetangga Wanita" led by Puan Azizan Shariff has intentions to commercialize it into a Kondo Rakyat eco-enzyme liquid product. During the Eco Film Fest at University of Malaya (29<sup>th</sup> & 30<sup>th</sup> October 2011), the eco-enzyme liquid produce by KR community was successfully launched and sold to the public.

During the launching of the programme, the community tested a community-wide collection of used clothing and the response was very encouraging. This gave an indication that there are a lot of untapped resources in the form of reusable items. Therefore, the community is interested to start a car-boot sale event to encourage the sales and exchange of these products.

**OBJECTIVE:** To set-up an iconic green bazaar for recyclables and environmentally friendly-based products at Kondo Rakyat.

**OUTCOME:** The first Kondo Rakyat Green Bazaar was held on 21<sup>st</sup> & 22<sup>nd</sup> May 2011. It attracted 60% of total 15,840 Kondo Rakyat residence and nearly 100 people of non-Kondo Rakyat residents. Nearly 1500 visitors came and 95% of them visited this Green Bazaar. Eight vendors had participated and one booth was reserved for the stakeholders to sell their reusable items and the total net-income was given back to the community. Total net income for that day was RM1089.00 and this income were then given back to the Kondo Rakyat community through a project called "From community to community"- a donation based project that target to the needy individuals among the Kondo Rakyat community. The 2<sup>nd</sup> Green-Bazaar was held on the 3<sup>rd</sup> & 4<sup>th</sup> December 2012, but this time the numbers were slight reduced where only 50% of Kondo Rakyat resident participated. However, within the 3<sup>rd</sup> Green Bazaar on 14<sup>th</sup> July 2012 there was a slight increase where nearly 1300 visitors come to the Green Bazaar. For the 2<sup>nd</sup> and 3<sup>rd</sup> Green Bazaar the net income was given back to the management body in return for organizing this Green Bazaar.

## GREEN BAZAAR



## USED COOKING OIL



The community is interested in experimenting with the idea of setting up a systematic collection system of used-cooking oil.

**OBJECTIVE:** To create awareness, provide facilities as well as mechanism for a systematic used-cooking oil collection. This oil can then be sold to generate side-income for the community. Mitigation of water pollution can also be addressed through this project.

**OUTCOME:** For the first collection we managed to get around 30 kg used cooking oil and for the second collection it was a little bit higher where around 100 kg used cooking oil was collected. However there were some difficulties in terms of selling the used cooking oil. As proposed, the CSR collaboration will sell the used cooking oil to the PTZ Bioenergy but somehow there was no response. Then another company called Fathopes Energy came and collected the remaining used cooking oil. This company also suggested to the community and the stakeholder to convert and recycle their used cooking oil to as a biodiesel that can be used for vehicles. This is also a good opportunity for the Kondo Rakyat to use back their own waste into something that can benefit them.

## CHALLENGES

Currently, the most challenging problem of Kondo Rakyat community project faces is the sustainability of the project. After 2011, the University of Malaya and Kondo Rakyat community were independently doing this project without the help of TM Berhad and Unilever Berhad. This is because we want to have a concrete idea on how to make this project based on the community own initiatives. We had agreed to focus on the organic waste produced by the community, where we decided to use the organic waste and transformed it into electricity by using an anaerobic digester machine. Basically it consists of three phases. We hope that this way forward strategy can sustain this project as well to make the community much more enthusiastic in greening their area and the aim towards an environmental sustainable community can be achieved.

Development of Peak Ground Acceleration Map of Penang Island, Malaysia Using Probabilistic Seismic Hazard Analysis and Ground



**Mastura binti Azmi**

Earthquake and Lifeline Engineering Laboratory  
 Research location: School of Civil Engineering,  
 Engineering Campus, USM, Penang & Parkroyal  
 hotel, Batu Feringghi, Penang.  
 Research term: August 2012 — September 2012



**Professor Junji Kiyono**

Department of Urban Management /  
 Universiti Sains Malaysia

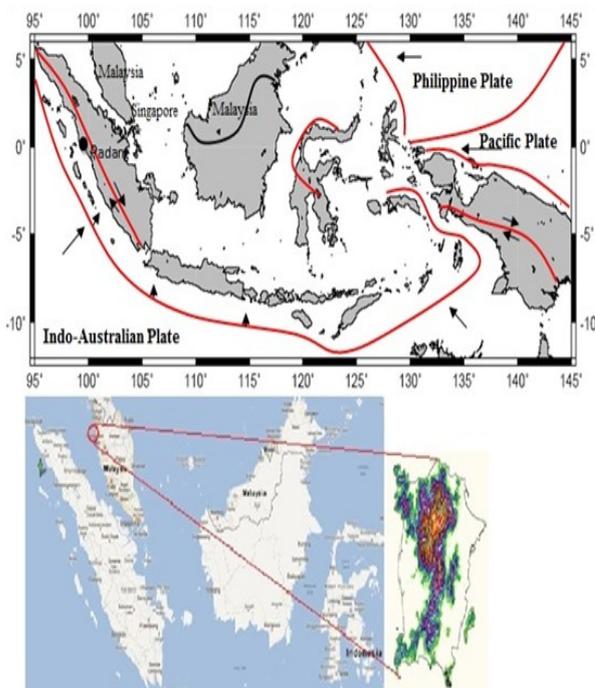
### Message from supervisor:

Geotechnical effects induced by an earthquake are crucial issues for the human safety. Penang Island, Malaysia is one of the geo-hazard prone areas such as landslides and slope failures. Although the main cause of landslides and slope failures is a heavy rain, multi-hazard effects like a coupling of a heavy rain and an earthquake have to be considered to avoid the worst situation from a view point of human security. The earthquake occurrence is not negligible even in Malaysia. Ms. Mastura binti Azmi is studying landslide effects to a residential in Penang Island by considering the precipitation under the condition of earthquake, and tries to compile the research from the aspects of risk management. I really expect that she will successfully complete her challenging research.

### Introduction and Objective:

Assessment of the effects of local soil conditions on ground response during an earthquake under ideal conditions is based on the assumption that response on the ground surface is based on the upward propagation of stress waves from bedrock formation. Factors affecting ground response include soil conditions and geologic features such as depth of soil deposits, bedding planes of soils overlying bedrock, changes of soil types, and faults crossing soil deposits. Peak ground acceleration for bedrock can be determined using probabilistic seismic hazard analysis (PSHA). Using suitable empirical attenuation relationships and historical data for nearby locations, predictions on peak ground acceleration can be made. This mathematical approach can solve prediction of potential earthquakes caused by prospective earthquakes.

Penang Island is situated at the northeast of Peninsular Malaysia and has a population of 1.5million (Fig.1). The Malaysian peninsula is said to be located in a low-seismic region with low and moderate seismic activity, depending on the distance from the site to the epicenter. However, recently there have been a number of earthquakes that affected the island, including the Great Sumatran–Andaman earthquake in 2004, which generated a tsunami as well as severe shaking on high ground in Penang Island.



In order to develop good prediction, historical data is one of the most important inputs needed. However, these data are scarce and limited. Therefore, data to estimate the probability of earthquakes were taken from the U.S. Geological Survey and the Indonesian Meteorology Agency, BMG. These data include the following about earthquakes from 1871 to 2011: date, location, magnitude, and depth.

This project attempts to develop a peak ground acceleration map for Penang Island, Malaysia using PSHA and ground motion analysis. The result indicates the maximum peak ground acceleration for Penang Island for probability of occurrences of 40% and 10% in 50 years.

During the visit to Malaysia, I managed to present my results in the AWAM International Conference on Civil Engineering & Geohazard Information Zonation 2012 which was held on 28<sup>th</sup> – 30<sup>th</sup> August 2012. The paper presented was under the Earthquake Section – title “Probabilistic Seismic Hazard for Penang Island, Malaysia” and I also managed to retrieve several data needed for my future research works which include soil investigation data and rainfall data for Penang Island.

Fig. 1 Location of Penang Island and subduction plates surrounding Malaysia

## Results and Discussion:

The results in the paper presented were as follows:-

From the analysis, peak ground accelerations for Penang Island were mapped based on 40%, 10%, 5% and 2% probability of occurrences in 50 years (98 years, 475 years, 975 years and 2500 years return periods, respectively). It can be seen that the results are lower if compared to highly seismic regions such as Japan and Indonesia. Although the values are lower but it is still important to take precaution and prepare any countermeasures related to earthquake induced disaster.

As far as the result is concerned, the slopes in Penang Island are safe from earthquake as long as the Island does not experience any ground motion more than 100gal (0.1g) within 2500 years return period. However this may change if bigger earthquakes occur nearby and larger than what the current historical data used in the analysis.

During the presentation, I managed to get good feedbacks from the audience. Some gave suggestion to improve my map as well as giving tips to check accuracy of the map. The conference also gave me chances to meet other researchers and I got new and great ideas on others' works and this helped to improve my work for the future. My visit to the School of Civil Engineering, USM, I managed to collect several soil investigation reports, rainfall data, and I met few professors and they taught me on several important topics on my research continuity and I also managed to grab the opportunity to learn several new methods to improve my research in the future.

## Conclusion and Future Plan:

The trip has provided me a good chance of collecting the data necessary for the continuity of the research. During the period, not only data collection was done but also on several occasions, I had the chance to learn new knowledge that will further help to speed up the research analysis. During the conference, I managed to meet other researchers as well as getting new input and comment that will help strengthen my research in future.

## Remarks:

I would like to acknowledge the support given by the GCOE-HSE, Kyoto University for the 2 weeks trip at Universiti Sains Malaysia (USM) from 20<sup>th</sup> August 2012 to 4<sup>th</sup> September 2012. Besides, I would like to acknowledge Professor Junji Kiyono, Associate Professor Aiko Furukawa, Professor Hamidi Abdul Aziz, Professor Dr Fauziah Ahmad, Associate Professor Dr Mohd Sanusi S. Ahamad, Associate Professor Dr Taksiah A. Majid and the staffs of School of Civil Engineering, USM with all the help and support.

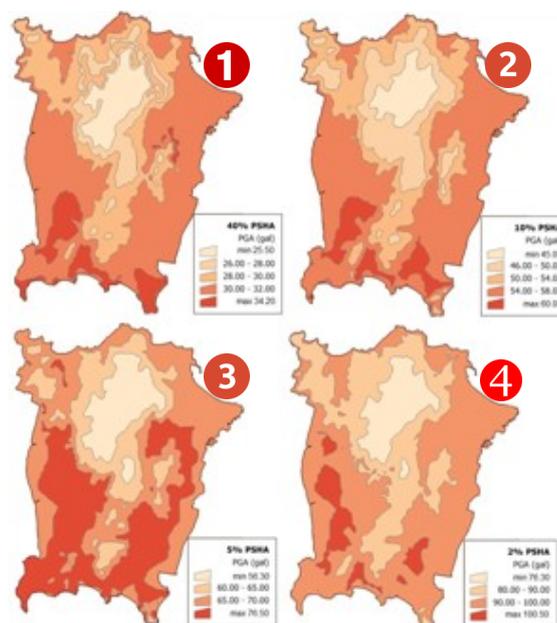


Fig. 2 Probabilistic seismic hazard map of Penang Island for 40% probabilities in 50 years (1), 10% probabilities (2), 5% probabilities (3) and 2% probabilities (4).



# Asian Core Program

Research and Education Center for the Risk Based Asian Oriented Integrated Watershed Management



Above: Participants of JSPS-ACP (IWM) gathered at the Comprehensive Symposium II

The Comprehensive Symposium II was held at Research Management & Innovation Complex, University of Malaya from 22<sup>nd</sup> November 2012 until 23<sup>rd</sup> November 2012. The symposium started with the opening remarks by Prof. Dr. Nik Meriam Nik Sulaiman and Prof. Yoshihisa Shimizu and followed by opening addresses by Prof. Masao Kitano (Dean of the Graduate School of Engineering, KU) as well as Prof. Dr. Awang Bulgiba Awang Mahmud (Deputy Vice-Chancellor of Research and Innovation, UM).



Above: Prof. Dr. Nik Meriam Nik Sulaiman, Prof. Yoshihisa Shimizu, Prof. Masao Kitano, Prof. Awang Bulgiba Awang Mahmud and Y. Brs Ir. Haji Ahmad Jamalluddin Shaaban.

The Director General of National Hydraulic Research Institute of Malaysia (NAHRIM), Y. Brs Ir. Haji Ahmad Jamalluddin Shaaban delivered his plenary speech on “Integrated Watershed Management: Issues, Practices and R&D for Selangor, Langat and Johor River Basins”. Consequently, group presentations on the following topics were conducted:

- Group 1— Dr. Sunmin Kim (Hydrologic Aspects in Integrated Watershed Management)
- Group 2— Dr. Keisuke Sato (Design of the Integrated Watershed Model to estimate the movement of environmental pollutants)
- Group 3— Mr. Ryota Gomi (Fecal source tracking to reduce the risk of bacterial infection in Yamato river watershed in Japan)
- Group 4— Dr. Nobumitsu Sakai (Water Governance Challenges in Malaysia River Basins - Based on Japanese Experiences)

The group presentation session continued with Malaysian group speakers as follows:

- Group 1— Dr. Norhaiza Ahmad (Preliminary Analysis of Sungai Johor Water Supplies)
- Group 2— Assoc. Prof. Dr. Faridah Othman (River basin network system for sustainable water quality assessments)
- Group 3— Dr. Goh Choo Ta (Langat River Basin: Risk, Review, Research & Replication)
- Group 4— Prof. Jamilah Mohamad (Governance)



Above: Both Japan & Malaysia group speakers



# Asian Core Program

Research and Education Center for the Risk Based Asian Oriented Integrated Watershed Management



On 23<sup>rd</sup> November 2012 (Day 2) of JSPS-ACP (IWM) Comprehensive Symposium II was initiated with the keynote address by the representative from Director General of Department of Irrigation and Drainage, Y. Bhg. Datuk Ir. Hj. Ahmad Husaini bin Sulaiman on ‘Integrated Watershed Management—A Malaysia Perspective’. It was followed by parallel group discussions for each group. JSPS Asian Core Program (Integrated Watershed Management) Comprehensive Symposium II ended successfully with the presentation from each group on the outcomes from their parallel group discussion as well as their future planning in this program.



In the evening, an excursion in Putrajaya. A total of 29 Japanese delegates joining this excursion to Putrajaya. There was a briefing about Putrajaya held by Mr. Noor Azhar Zainal at Putrajaya Council Building. The excursion continued with the tour around Putrajaya at some pit stops before heading towards Kuala Lumpur International Airport.

NOVEMBER  
23  
FRIDAY



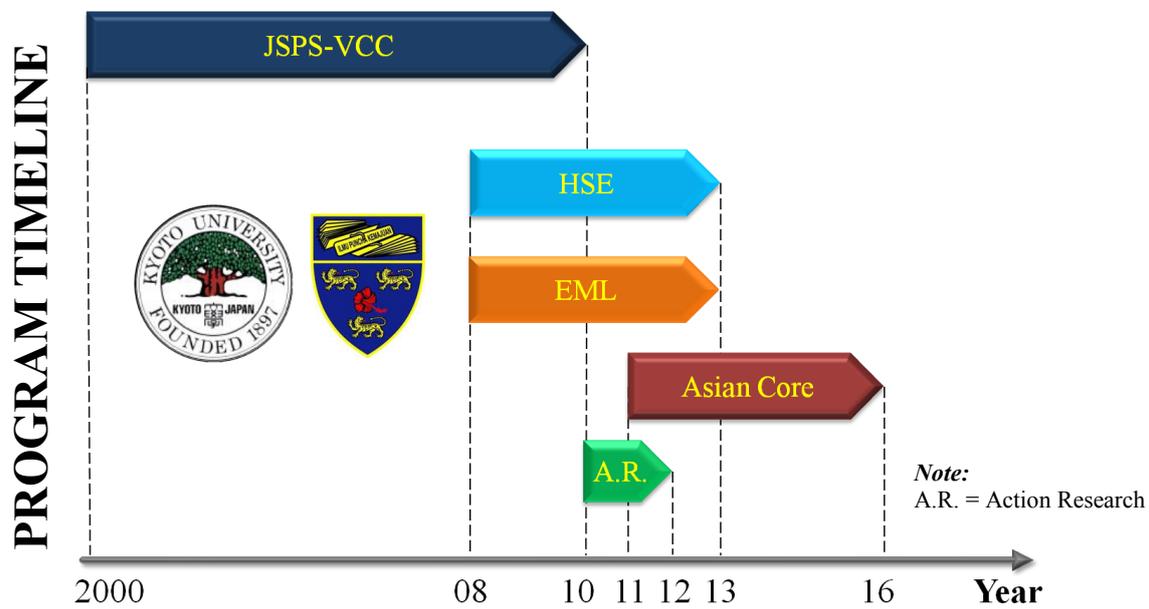
**Above and below:** Members were entertained to the scenic view at Putrajaya.



**Above:** JSPS-ACP (IWM) Comprehensive Symposium II Japanese delegates visit to Putrajaya Council before the tour around Putrajaya.

**Below:** UTM delegates and Japanese delegates group photo before their departure.





Programs and its duration under international collaboration between Kyoto University and University of Malaya

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